**TOSHIBA** **INSTRUCTION MANUAL**

CCD COLOR CAMERA

# IK-643A

Please read this manual thoroughly before use, and keep it handy for future reference.

Record in space provided below the Model No. and the Serial No. as found on the label on the bottom of this unit.
Model. No. IK-643A Serial No. _____
Retain this information for future reference.

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# IMPORTANT SAFEGUARDS

1. **Read Instructions**
   All the safety and operating instructions should be read before the product is operated.
2. **Retain Instructions**
   The safety instructions and instruction manual should be retained for future reference.
3. **Heed Warnings**
   All warnings on the product and in the instruction manual should be adhered to.
4. **Follow Instructions**
   All operating and use instructions should be followed.
5. **Cleaning**
   Disconnect this video product from the power supply before cleaning.
6. **Attachments**
   Do not use attachments not recommended by the video product manufacturer as they may cause hazards.
7. **Water and Moisture**
   Do not use this video product near water-for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool and the like.
8. **Accessories**
   Do not place this video product on an unstable cart, stand, tripod, bracket or table The video product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with stand, tripod, bracket, or table recommended by the manufacturer, or sold with the video product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
9. **Ventilation**
   This video product should never be placed near or over a radiator or heat register. This video product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
10. **Power Sources**
    This video product should be operated only from the type of power source indicated on the marking label. if you are not sure of the type of power supply to your location, consult your product dealer.
11. **Power-Cord Protection**
    Power-Supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, screws and the point where they exit from the product.
12. **Lightning**
    For added protection for this video product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the power supply and cable system. This will prevent damage to the video product due to lightning and power-line surges.
13. **Overloading**
    Do not overload power supply and extension cords as this can result in a risk of fire or electric shock.
14. **Object and Liquid Entry**
    Never push objects of any kind into this video product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electrical shock. Never spill liquid of kind on the video product.
15. **Servicing**
    Do not attempt to service this video product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
16. **Damage Requiring service**
    Disconnect this video product from the power supply and refer servicing to qualified service personnel under the following conditions.
    a. When the power-supply cord or plug is damaged.
    b. If liquid has been spilled, or objects have fallen into the video product.
    c. If the video product has been exposed to rain or water.
    d. If the video product does not operate normally by following the operating instructions in the instruction manual. Adjust only those controls that are covered by the instruction manual as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the video product to its normal operation.
    e. If the video product has been dropped or the cabinet has been damaged.
    f. When the video product exhibits a distinct change in performance-this indicates a need for service.
17. **Replacement Parts**
    When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer of have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.
18. **Safety Check**
    Upon completion of any service or repairs to this video product, ask the service technician to perform safety checks to determine that the video product is in proper operating condition.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION TO REDUCE THE RISK OF ELECTRIC SHOCK.
DO NOT REMOVE COVER (OR BACK).
NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

• The CAUTION label, shown on the left, is attached on the bottom of camera.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

• CAUTION
CONNECT 24V AC UL LISTED CLASS 2 POWER SUPPLY.

**INFORMATION**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

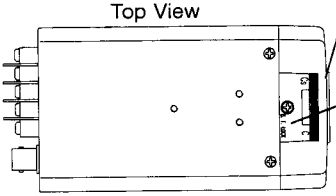
**USER-INSTALLER CAUTION :** Your authority to operate this FCC verified equipment could be voided if you make changes or modifications not expressly approved by the party responsible for compliance to Part 15 of the FCC rules.

# 1. CAMERA PARTS AND FUNCTIONS

Focus Adjustment Dial:
Rotate this dial to appropriate setting. Rotate towards "CS" side when using a CS mount lens. Rotate towards "C" side when using a C mount lens. This Focus Adjustment Dial can also be used for back-focus adjusment.

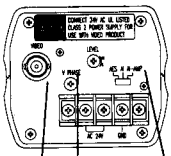
Video (BNC) Output Terminal:
Connect to monitor.

Top View

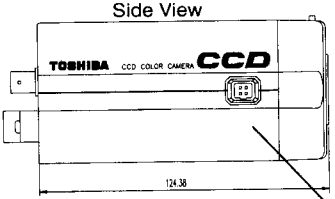


Back Focus Set Screw:
This adjustment is for tightening or loosening the Focus Adjustment Dial. Before using Focus Adjusment Dial, this set screw should be loosened. After using the Focus Adjustment Dial, this screw should be tightened.

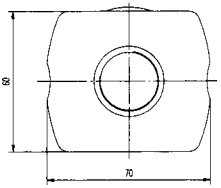
Rear view



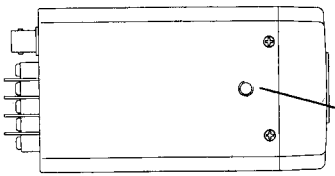
Side View




Front View




Bottom View



Auto-IRIS Terminal:
When using an auto-iris it needs to be connected to this terminal.

Camera Mount-This 1/4 X 20 threaded hole if for use when mounting the camera.

Lens Control Switch:
AES: (Auto-Electronic Shutter) Set for Manual Iris Lenses
AI: Set for Video-type Auto-Iris Lenses
AI-AMP: Set for Direct or DC-Type Auto-Iris Lenses

AC power supply terminal:
Connect to 24V AC UL listed class 2 power supply

Level Adjustiment:
When using a Direct or DC-Type Auto-Iris Lens, use this adjustment to attain an appropriate video level.

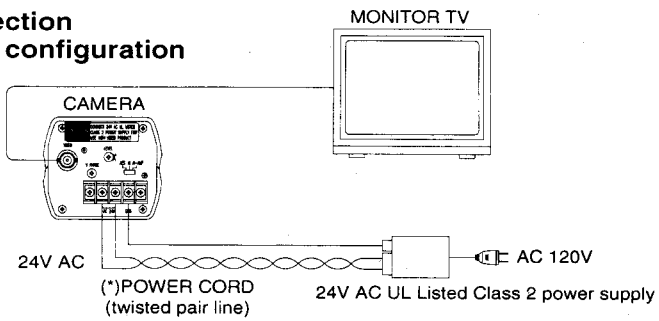
V. Phase Adjusment:
Used when multiple cameras within a system are out of phase. Refer to section two and seven of the manual for more information.

# 2. CONNECTIONS AND OPERATIONS

Notes on connecting

- Power plugs of connected equipment must be disconnected before installations.
- A 75-ohm coaxial cable (3C-2V or 5C-2V) is required for standard connection.
- For details of wiring and operation of equipment to be connected, refer to their operation manuals.
- Lenses, coaxial cables for video signals and the power cord are not supplied with the camera.

## 1. Basic connection
## Single system configuration




(*)Power cord: minimum wire size of 18 AWG is recommended.

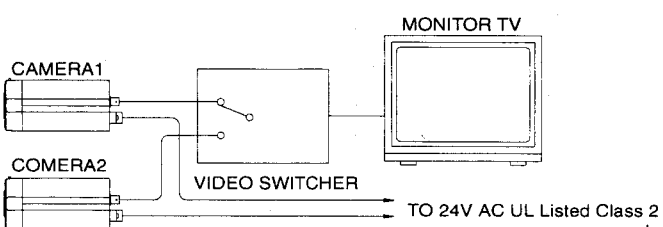
**Do not overload power supply**

Since this camera uses 24V AC UL Listed Class 2 power supply, it should be connected to a power supply that allows for at least 5w consumption.

## Line - Lock control

Matching the vertical synchronization with the power frequency is called the Line-Lock.

When two or more cameras are switched by the video switcher for viewing by a monitor TV, the vertical sync. phase can be locked with the power frequency, and a stable vertical sync. is obtained without being disturbed at the time of switching.




## Cautions:

- The camera is synchronized to the power frequency of 60 ± 1 Hz covering a normal fluctuation of the power frequency. However, the camera may not cover a large fluctuation caused from the power generated by an engine generator, etc.
- It takes about 10 seconds or more until a stable synchronization is obtained after the power is turned on. This is normal, because several seconds are required to stabilize the camera against power noise.
- Refer to " 7.LINE-LOCK PHASE " for adjustment.

## 2. Operation

(1) Mount a lens on the camera and connect equipment. Applicable lenses are specified in Section 3 " LENS ".
(2) Adjust the lens diaphragm and focus for optimum image.

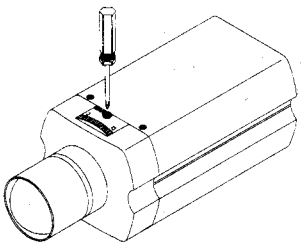
# 3. LENS

## Back-Focus Adjusment

Back-Focus is adjusted at the factory to accommodate most standard lenses. However, at times, slight adjustment to the IK-643A back-focus is necessary.

Mount the Lens to the camea first. Then loosen the Back-Focus Set Screw. Then rotate the Back-Focus Adjustment Dial until a clear image is achieved. Afterwards, tighten the Back-Focus Set Screw.

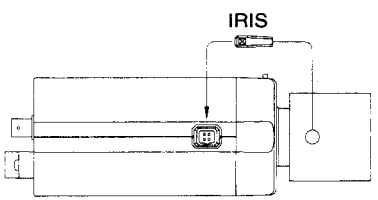
Adjust by retating the lens



## Note

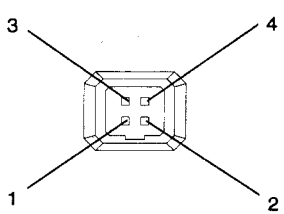
When the lens weight is more than 1 kg (2.2 lbs), support it on the lens side rather than rely on screw that fix the camera to the tripod.

This camera supports two types of auto-iris lens: Video-type and DC (direct drive) types. Connect the auto-iris connector plug to the IRIS terminal on the side of the camera. Refer to the chart below for correct wiring and set up.




Auto iris lens

| | Video IRIS Lens | Direct Drive IRIS Lens |
|---|---|---|
| IRIS terminal pin | 1. +12V | 1. Damp-(y) |
| | 2. NC | 2. Damp+( $\gamma$ ) |
| | 3. Video | 3. Driver+(wh) |
| | 4. GND | 4. Driver-(g) |
| AES/AI Switch | AI position | AI-AMP position |

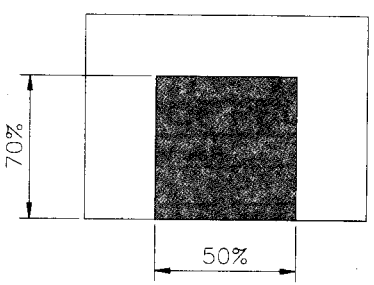


# 4. AUTOMATIC ELECTRONIC SHUTTER

Exposure time is controlled automatically within a range of 1/60 sec. to 1/80000 sec. to obtain an adequate signal when the back panel switch is turned to AES.
When the back panel switch is turned to AI or AI Amp, the exposure time is fixed 1/60 sec.

# 5. BACKLIGHT COMPENSATION

When the automatic electronic iris and the auto iris lens is used, the exposure adjustment is automatically performed so that a best picture is obtained at a monitor zone of about 50% in horizontal and about 70% in vertical direction.




(Monitor screen)

# 6. WHITE BALANCE

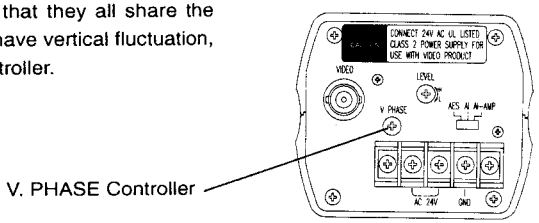
In this camera, the white balance is automatically adjusted corresponding to the color temperature variations on the object.

### Note

When external light and internal light are mixed or when the object includes some chromatic colors are shot, a hue may partly have a little difference.

# 7. LINE-LOCK PHASE

If two or more cameras within a system have different AC line phases are switched by the video switcher, the picture on the monitor TV will fluctuate vertically. Connect 24V AC input lines of all cameras so that they all share the same phase. If you still have vertical fluctuation, adjust the V.PHASE controller.




V. PHASE Controller

Rear View

# 8. NOTES ON USE AND INSTALLATION

- **Do not aim the camera at the sun**
  Do not aim the camera at the sun or point it at the sun even if you are not shooting.

- **Do not shoot intense light**
  Intense light such as a spotlight may cause a bloom or smear, A vertical stripe may appear on the screen. However, this is not a malfunction.

- **Treat the camera with care**
  Do not drop the camera or subject it to strong shock of vibration. Otherwise, the camera may malfunction.

- **Never touch internal parts**
  Do not touch the internal parts of the camera other than the parts specified. Otherwise, the camera may malfunction.

- **Do not splash water on the camera**
  Install the camera where the camera can be kept dry. If the camera gets wet, turn off the power and contact your dealer.

- **Install the camera**
  **Where no video noise appears**
  If cables are wired near electric lighting wires or a TV set, noise may appear in images. In this event, relocate cables or reinstall equipment.

- **Check the ambient temperature and humidity**
  Avoid using the camera where the temperature is hotter or colder than specified. Otherwise, the quality of images may deteriorate or internal parts may be affected. Special care is required to use the camera at high temperature and humidity.

- **Should you notice any trouble**
  If any trouble occurs while you are using the camera, turn off the power and contact your dealer. If you continue to use the camera when there is something wrong with it, the trouble may much worse and an unpredictable accident may occur.

# 9. IN CASE OF PROBLEMS

| Condition | Check Points |
|---|---|
| No image | • Are the camera and connected equipments turned on?<br>• Is the irls of the lens adjusted properly?<br>• Are cables connected correctly? |
| Unnatural color | • Is the monitor TV adjusted correctly?<br>• Is the lighting too weak? |

# 10. CONFIGURATION

| | | |
|---|---|---|
| (1) Camera | 1 | |
| (2) Accessories | | |
| (a) Lens Connector | 1 | (E4-191J-100(M)) |
| (b) Instruction Manual | 1 | |
| (c) Lens Cap | 1 | |
| (d) Mount Base | 1 | |
| (e) Screw | 3 | |

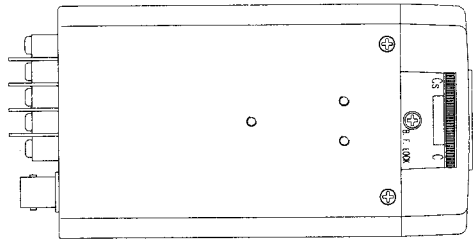
# 11. SPECIFICATIONS

| | |
|---|---|
| Power | AC 24V ± 10% 60 Hz 5.0W (MAX) |
| Image sensor | 1/3 inch CCD image area sensor |
| Image pickup area | 4.9 mm (0.193inch) horizontal x 3.7mm (0.146inch) vertical (1/3inch type) |
| Effective picture element | 771 horizontal x 492 vertical |
| Scanning system | 2:1 interlace |
| Scanning frequency | 15.75kHz horizontal 60Hz vertical |
| Synchronization | Line-Lock , Internal |
| Resolution | Horizontal 480TV lines or more<br>Vertical 350TV lines or more |
| Minimum illuminance of subject | 0.4Lux ( F1.2, More than 10% of image output $\gamma = 0.45$ ) |
| S/N | 50 dB or more |
| Video output | VBS 1.0 V p-p NTSC system |
| Output impedance | 75 Ω unbalanced |
| White balance | Automatic (3000°K to 6000°K) |
| Lens mount | mount both C and CS |
| Ambient temperature | -10 °C to +50 °C (14 °F to 122 °F) |
| Ambient humidity | 30% to 90% |
| Weight | 700 g(MAX) |
| External dimensions | 2.76(W) x 2.36(H) x 4.90(D) inches (70x60x124.38mm) |
| Automatic electronic shutter | ON (1/60s to 1/80000s) / OFF (1/60s) |

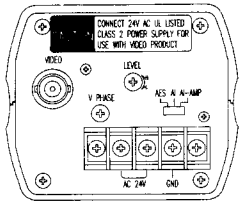
• Design and specifications are subject to change without notice.

# 12. EXTERIOR VIEW

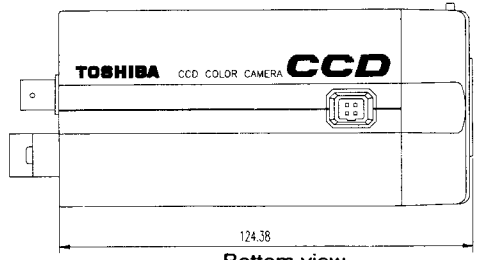
Top view



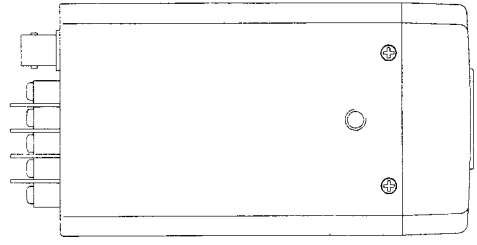
Rear view



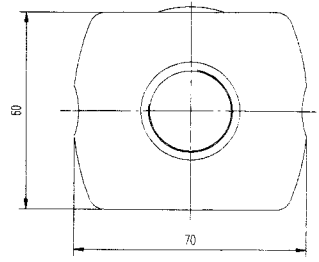

Side view




Bottom view



Front view




Dimensions : mm

# TOSHIBA

## LIMITED WARRANTY
TOSHIBA CCD CAMERA

Imaging Systems Division of Toshiba America Information Systems, Inc. ("ISD") makes the following limited warranties. These limited warranties extend to the Original End-User Purchaser.

**Limited One (1) Year Warranty of Labor and Parts** ISD warrants this product and its parts against defects in materials or workmanship for a period of one year after the date of original retail purchase.
During this period, ISD will repair a defective product or parts, without charge to you. You must deliver the entire product to a ISD Authorized Service Provider.
You pay for all transportation and insurance charges for the product to the Authorized Service Provider.

**Instruction Manual** You should read the instruction manual thoroughly before operating this product.

**Your Responsibility** The above warranties are subject to the following conditions:

1. You must retain your bill of sale or provide other proof of purchase.
2. You must notify ISD Authorized Service Provider within thirty(30) days after you discover a defective product or parts.
3. All warranties of this product must be made by ISD Authorized Service Provider.
4. These warranties are effective only if the product is purchased and operated in the U.S.A.
5. Labor service charges for installation and adjustment of customer controls are not covered by this warranty.
6. Warranties extend only to defects in materials or workmanship as limited above and do not extend to any product or parts which have been lost or discarded by you or to damage to product or parts caused by misuse, accident, improper installation, improper maintenance or use in violation of instructions furnished by us; or to units which have been altered or modified without authorization of ISD or to damage to product or parts there of which have had the serial number removed, altered, defaced or rendered illegible.

**Step-By-Step Procedures - How to Obtain Warranty Service** To obtain warranty servicing, you should:

1. Arrange for the delivery of the product to ISD Authorized Service Provider. Products shipped to the Authorized Service Provider must be insured and safely and securely packed, preferably in the original shipping carton, and a transportation and insurance charges must be prepaid by you.
2. If you have any question about service, please contact the ISD service department at the following address:

Adderss: TOSHIBA AMERICA INFORMATION SYSTEMS, INC.
IMAGING SYSTEMS DIVISION ("ISD")
9740 Irvine Boulevard
Irvine, California 92618-1697
Telephone: (714) 461-4989, 4992

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**IN NO EVENT SHALL ISD BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES.** Some states do not allow the exclusion or limitation of incidental or consequential damages may not apply to you.

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